CLAIMS

1. A method for determining a pig's resistance to an RNA virus, wherein the method comprises the step of detecting an 11-bp deletion in a swine Mx1 gene exon, wherein the deletion is from positions 2064 to 2074 in the nucleotide sequence of SEQ ID NO: 1.

2. The method according to claim 1, comprising the steps of:
(a) preparing a DNA sample from a subject pig;
(b) amplifying a DNA that is a swine Mx1 gene exon and comprises the nucleotide sequence from positions 2064 to 2074 in the nucleotide sequence of SEQ ID NO: 1; and
(c) determining the nucleotide sequence of the amplified DNA.

3. The method according to claim 1, comprising the steps of:
(a) preparing a DNA sample from a subject pig;
(b) digesting the prepared DNA with a restriction enzyme;
(c) separating DNA fragments based on their size; and
(d) comparing the sizes of detected DNA fragments with that of a control.

4. The method according to claim 1, comprising the steps of:
(a) preparing a DNA sample from a subject pig;
(b) amplifying a DNA that is a swine Mx1 gene exon and comprises the nucleotide sequence from positions 2064 to 2074 in the nucleotide sequence of SEQ ID NO: 1;
(c) digesting the amplified DNA with a restriction enzyme;
(d) separating DNA fragments based on their size; and
(e) comparing the sizes of detected DNA fragments with that of a control.

5. The method according to claim 1, comprising the steps of:
(a) preparing a DNA sample from a subject pig;
(b) amplifying a DNA that is a swine Mx1 gene exon and comprises the nucleotide sequence from positions 2064 to 2074 in the nucleotide sequence of SEQ ID NO: 1;
(c) dissociating the amplified DNA into single strands;
(d) separating the dissociated single-stranded DNAs on a non-denaturing gel; and
(e) comparing the gel mobility of the fractionated single-stranded DNAs with that of a control.

6. The method according to claim 1, comprising the steps of:
(a) preparing a DNA sample from a subject pig;

(b) amplifying a DNA that is a swine Mx1 gene exon and comprises the nucleotide sequence from positions 2064 to 2074 in the nucleotide sequence of SEQ ID NO: 1;
(c) determining the molecular weight of the DNA amplified in step (b) by mass spectrometry; and
(d) comparing the molecular weight determined in step (c) with that of a control.

7. The method according to claim 1, comprising the steps of:
(a) preparing a DNA sample from a subject pig;
(b) amplifying a DNA that is a swine Mx1 gene exon and comprises the nucleotide sequence from positions 2064 to 2074 in the nucleotide sequence of SEQ ID NO: 1;
(c) preparing a substrate with an immobilized nucleotide probe;
(d) contacting the DNA prepared in step (b) with the substrate prepared in step (c);
(e) determining the intensity of hybridization between the DNA and the nucleotide probe immobilized on the substrate; and
(f) comparing the intensity determined in step (e) with that of a control.

8. The method according to claim 1, comprising the steps of:
(a) preparing a protein sample from a subject pig; and
(b) determining the amount of a mutant swine Mx1 protein in the protein sample, wherein said mutant swine Mx1 protein is encoded by a nucleotide sequence that is a swine Mx1 gene exon in which the 11-bp nucleotide sequence from positions 2064 to 2074 in SEQ ID NO: 1 has been deleted.

9. The method according to any one of claims 1 to 8, further comprising the step of determining that a subject pig is susceptible to an RNA virus when the 11-base deletion defined above is detected or the subject pig is resistant to the RNA virus when the deletion is not detectable.

10. The method according to any one of claims 1 to 9, wherein the RNA virus is an influenza virus or the causative virus of PRRS.

11. An oligonucleotide to be used as a PCR primer in the method according to any one of claims 1 to 10, wherein the oligonucleotide is used to amplify a DNA region that is a swine Mx1 gene exon and comprises the nucleotide sequence from positions 2064 to 2074 in the nucleotide sequence of SEQ ID NO: 1.

12. An oligonucleotide comprising at least 15 nucleotides, and hybridizing to a DNA region that is a swine Mx1 gene exon and comprises the nucleotide sequence from positions 2064 to 2074 in the nucleotide sequence of SEQ ID NO: 1, or a DNA region that is a swine Mx1 gene exon and comprises a nucleotide sequence in which the nucleotide sequence from positions 2064 to 2074 has been deleted.

13. An antibody recognizing a mutant swine Mx1 protein encoded by the nucleotide sequence of a swine Mx1 gene exon in which the nucleotide sequence from positions 2064 to 2074 in SEQ ID NO: 1 has been deleted.

14. A test reagent for determining a pig's resistance to an RNA virus, wherein the reagent comprises the oligonucleotide according to claim 11 or 12, or the antibody according to claim 13.

15. The test reagent according to claim 14, wherein the RNA virus is an influenza virus or the causative virus of PRRS.